CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 80-28

NPDES NO. CA0006246

REISSUING WASTE DISCHARGE REQUIREMENTS FOR:

GENERAL ELECTRIC COMPANY
VALLECITOS NUCLEAR CENTER
PLEASANTON, ALAMEDA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board), finds that:

1. General Electric Company (GE), Vallecitos Nuclear Center (VNC) hereinafter called the discharger, submitted an application for reissuance of its NPDES permit (NPDES Standard Form C) dated June 28, 1979.

2. VNC is located in Vallecitos Valley about five miles southeasterly from the City of Pleasanton. The primary functions of VNC are nuclear fuel research and production of radio-isotopes for medical and other uses. Facilities on site (see Attachment 1) include a (50 MW) test reactor known as GETR, which has been shut down since October 27, 1977; a small (100 KW) graphite moderated nuclear test reactor known as NTR: laboratories for studies in radiochemistry, metallurgy, and nuclear fuels; shops; and support facilities. There are also two other nuclear reactors on site, which have been shut down for a number of years. GE has no present plans for reactivating either of these two reactors.

3. VNC operations generate sewage and industrial wastes. The industrial waste consists of non-contact equipment cooling water, cooling tower blowdown and other miscellaneous liquid discharges from industrial facilities, including distillate from a waste evaporator which separates non-volatile radioactive material from wastewaters. Sewage (approximately 0.007 mgd) is treated and disposed on GE property by spraying on land.

   Industrial waste flows have been approximately 0.085 mgd since GETR was shut down. Flows were approximately 0.23 mgd when GETR was operating. All wastewater, other than storm runoff, is collected in retention basins and released after compliance with NRC (Nuclear Regulatory Commission) standards, has been assured. The discharges from the three retention basins enter a drainage channel which empties into Vallecitos Creek. Vallecitos Creek joins Arroyo de la Laguna and Alameda Creek about two miles further downstream. Vallecitos Creek, Arroyo de la Laguna and Alameda Creek are all nontidal waters of the United States.

4. The Regional Board on December 17, 1974 adopted Order No. 74-201 prescribing waste discharge requirements and compliance time schedules for GE-VNC. On November 16, 1976 the Board amended Order No. 74-201 by adopting Order No. 76-127. On December 18, 1979 the Board adopted Order No. 79-168 amending and reissuing the NPDES permit contained in Order No. 74-201, until May 27, 1980 to update land disposal data and revise the Self-Monitoring Program.

5. A Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) was adopted by the Board in April 1975. The Basin Plan contains water quality objectives for San Francisco Bay, Alameda Creek, Arroyo De La Laguna, and their tributaries.

6. The existing and potential beneficial uses of Vallecitos Creek and contiguous waters are:

   a. Recreation
   b. Fish migration and habitat
   c. Habitat and resting for waterfowl and migratory birds
   d. Industrial, agricultural & municipal water supply
   e. Esthetic enjoyment
   f. Ground water recharge

7. The Basin Plan:

   a. States that it shall be prohibited to discharge any wastewater which has particular characteristics of concern to beneficial uses into non-tidal waters or at any point at which it does not receive an initial dilution of at least 10:1. Exceptions will be considered where the discharge is approved as part of a reclamation project or where it can be demonstrated that a net environmental benefit will be derived from such a discharge.

   b. States further, with respect to Alameda Creek watershed discharges that the direct discharge of wastewater shall be prohibited during the portion of the year when no natural flow occurs in Alameda Creek above Niles. The threat of a buildup of dissolved solids, stable organics and other pollutants in the ground water of the Niles Cone area recharged with waters of Alameda Creek is most critical in the dry weather period when wastewater may account for up to 20 percent of the water percolating to the basin.

8. Discharger has complied with the requirements of Order No. 76-127 by disposing all sanitary wastes on land at all times, and by submitting a feasibility report in June 1977 on land disposal of industrial wastes. This report states that land disposal of industrial waste is technically feasible either seasonally or year-around. Discharger has requested, however, that it be permitted to continue year-around discharges of industrial wastewater to Vallecitos Creek; claiming that its wastewater

quality is better than that of natural waters found in the area. The Board's staff has evaluated data pertinent to this request, and finds that the dischargers claim may be justified, but further analysis is necessary to substantiate a Basin Plan exemption.

9. Source, byproduct, and special nuclear materials of the type regulatd by the Atomic Energy Act (AEA) are not "pollutants" under the Federal Clean Water Act (CWA) and, therefore not subject to control by EPA or the States, under the NPDES program. The U. S. Nuclear Regulatory Commission (NRC) has sole authority to regulate possession and use of such materials and to adopt and enforce effluent standards for radioactivity. GE-VNC operates under five licenses from NRC which cover possession, use and discharges of the above described materials regulated under the AEA. Consequently, the Regional Board has no jurisdiction, under the CWA, to regulate radioactivity in the effluent discharged from this facility. The California State Department of Health Services (CSDHS), has been delegated certain regulatory powers by Federal-State agreement, and GE-VNC has a license from CSDHS for possession and all activities involving "source" (non-enriched uranium) and "by-products" nuclear materials (after separation from reactor fuel). NRC and CSDHS have jurisdiction, expertise and responsibility to monitor and enforce their licensing provisions and regulations.

10. The Regional Board is required to prescribe waste discharge requirements to implement water quality control plans, protect beneficial uses and achieve water quality objectives. The Basin Plan provides that ground and surface waters designated for domestic or municipal drinking water supply shall not contain concentrations of radionuclides in excess of limits specified in Title 17 (now in Title 22) of the California Administrative Code. Under the California Water Code the Regional Board may include these limits in requirements for receiving waters used as water supplies; but it cannot prescribe more stringent limits.

11. Although Self-Monitoring data on GE Co. discharges shows that they have always complied with radiological limits prescribed by this Board, they have contained tritium. The Company has agreed by letter of December 10, 1979 to recycle reprocessing distillate, if GETR restarts, so that tritium levels in discharges to Vallecitos Creek will average less than 20,000 pCi/l (pico-curies per liter). This concentration is the annual average Maximum Contaminant Level specified in the California Administrative Code (CAC), Title 22, Section 64443 (Table 5) for man-made radioactivity in drinking water supplies, and conforms to EPA drinking water standards applicable after June 1980.

At May 20, 1980 Regional Board Meeting, General Electric Company committed itself to cease the discharge of industrial wastewater which contains site generated radioactive substances (presently about 2000 gallons) to Vallecitos Creek.

12. The Regional Board cannot prohibit a discharge based on radiological considerations alone, and therefore, the prohibition cited in Section 7.a, above may not be applicable to this discharge because the industrial wastewater may not contain other particular characteristics of concern to beneficial uses. Discharger has submitted data which partially supports his contention that the quality of the wastewater, with respect to TDS (Total Dissolved Solids), chlorides, stable organics and heavy metals, is better than that of typical surface waters found in the area.

The prohibition cited in Section 7.b, above is applicable during dry weather and does not include provision for exceptions. It is the Board's intent to consider inclusion of such provisions when the Basin Plan is amended, where discharges would not threaten to cause a buildup of dissolved solids, stable organics, or other pollutants in ground waters of the Niles Cone.

This Board finds, therefore, that while year-around discharge of industrial wastewater by GE-VNC is contrary to the Basin Plan prohibition cited in Section 7.b, above, it could be acceptable from a water quality protection standpoint, and it would not violate the intent of the Basin Plan, if strict effluent limits, to be prescribed by this Board, are met.

13. Effluent radiological standards in GE-VNC licenses control these discharges and their effects on ground and surface waters. These are prescribed pursuant to the Code of Federal Regulations-Energy, Title 10, Chapter 1, Part 20 et seq.; and in California Administrative Code Titles 17 and 22 (Regulations for Radiation Control and for Domestic Water Quality and Monitoring, respectively).

14. Specific radiological effluent and receiving water limits are not included in this NPDES permit because the CSDHS and NRC have primary responsibility for regulation of such constituents in wastewater discharges.

15. Effluent limitation and toxic and effluent standards established pursuant to Sections 208(b), 301, 304, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharge.

16. The Board has notified the discharger and interested agencies and persons of its intent to reissue waste discharge requirements for the discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

17. The Board is not required to comply with the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (California Environmental Quality Act) as this order is an NPDES permit renewal and is exempt from such provisions per Section 13389 of the Water Code.

18. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED That the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder and the provisions of the Federal Water Pollution Control Act and regulations and guidelines adopted thereunder, shall comply with the following.

A. Prohibitions

1. No wastewater containing sewage shall be allowed to escape from the discharger's property, either by surface flow or by airborne spray.

2. Direct discharge of industrial wastewater is prohibited during the portion of the year when no natural flow occurs in Alameda Creek above Niles. This prohibition will be implemented in accordance with the compliance time schedule in Provision D.1 of this Order.

B. Effluent Limitations - Industrial Waste

1. The discharge of an effluent containing constituents in excess of the following limits is prohibited:

Constituent	Units	30-Day Average	Maximum Daily	90-Day 90th percentile	90-Day Average
a) Total Suspended Matter	mg/l	5.0	10.0		
b) Oil & Grease	mg/l	5.0	10		
c) Copper	mg/l	.02	.05		
d) Temperature, max.	^{o}F	-	90		
e) Mercury	mg/l	0.001	0.002		
f) Total dissolved solids*	mg/l		500	360	250
g) Chloride*	mg/l		250	100	60

*NOTE: These limits may be modified to assure environmental enhancement resulting from the discharges, after GE-VNC submits its report in accordance with the compliance time schedule in Provision D.1 of this Order.

2. The discharge pH shall not be less than 6.5 nor greater than 8.5.

3. In any representative set of samples the waste as discharged shall meet the following limit of quality:

TOXICITY:

The survival of test fishes in 96-hour bioassays of the effluent shall achieve a median of 90% survival for three consecutive samples and a 90 percentile value of not less than 70% survival for 10 consecutive samples.

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C. Receiving Water Limitations

1. The discharge of waste shall not cause the following conditions to exist in water of the State at any place:

   a. Floating, suspended, or deposited macroscopic particulate matter or foam;

   b. Bottom deposits or aquatic growths;

   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

   d. Visible, floating, suspended or deposited oil or other products of petroleum origin;

   e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State at any place:

a.	Dissolved oxygen	7.0 mg/l minimum. Annual median - 85% saturation. When natural factors cause lesser concentration(s) than those specified above, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.
b.	pH	Variation from natural ambient pH by more than 0.5 pH units.

3. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

D. Provisions

1. The discharger shall submit to this Board, by December 1, 1980 a technical report on the net environmental benefits which would result from continued, year-around discharge of their industrial wastes, into Vallecitos Creek; including measures taken or proposed to assure that pollutants in the waste discharge will be maintained at levels which will enhance water quality and quantity in Vallecitos and Alameda Creeks; if discharger wishes to be exempted from the applicable Basin Plan prohibitions. Discharger shall also submit the following to the Executive Officer, in order to assure coordination of GE-VNC work with that of the staff:

1.	A detailed work plan and report outlined by	July 1, 1980
2.	A report of progress	October 1, 1980
3.	The completed report, as described above, by	December 1, 1980

2. This permit may be modified, or, alternatively, revoked and reissued, to comply with any applicable effluent limitation issued pursuant to the order the United States District Court for the District of Columbia issued on June 8, 1976, in Natural Resources Defense Council Inc. et. al. v. Russell E. Train, 8 ERC 2120 (D.D.C. 1976), if the effluent limitation so issued:

   (a) is different in conditions or more stringent than any effluent limitation in the permit; or

   (b) controls any pollutant not limited in the permit.

3. This Board's Order Nos. 74-201, 76-127 and 79-168 are hereby rescinded.

4. The discharger shall comply immediately with all terms of this Order.

5. The discharger shall comply with the attached Self-Monitoring and Reporting Program as ordered by the Executive Officer.

6. The discharger shall comply with all items of the attached "Standard Provisions, Reporting Requirements, and Definitions" dated April 1977, except A.5, A.12, A.16, B.1, B.2, B.3 and B.5.

7. The discharger shall review, update, and submit forthwith its contingency plan as required by Board Resolution No. 74-10. The discharge of pollutants in violation of this Order where the discharger has failed to develop and/or implement a contingency plan will be basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.

8. This Order expires on June 1, 1981. The discharger must file a Report of Waste Discharge in accordance with Title 23, Chapter 3, Subchapter 9, of the California Administrative Code not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

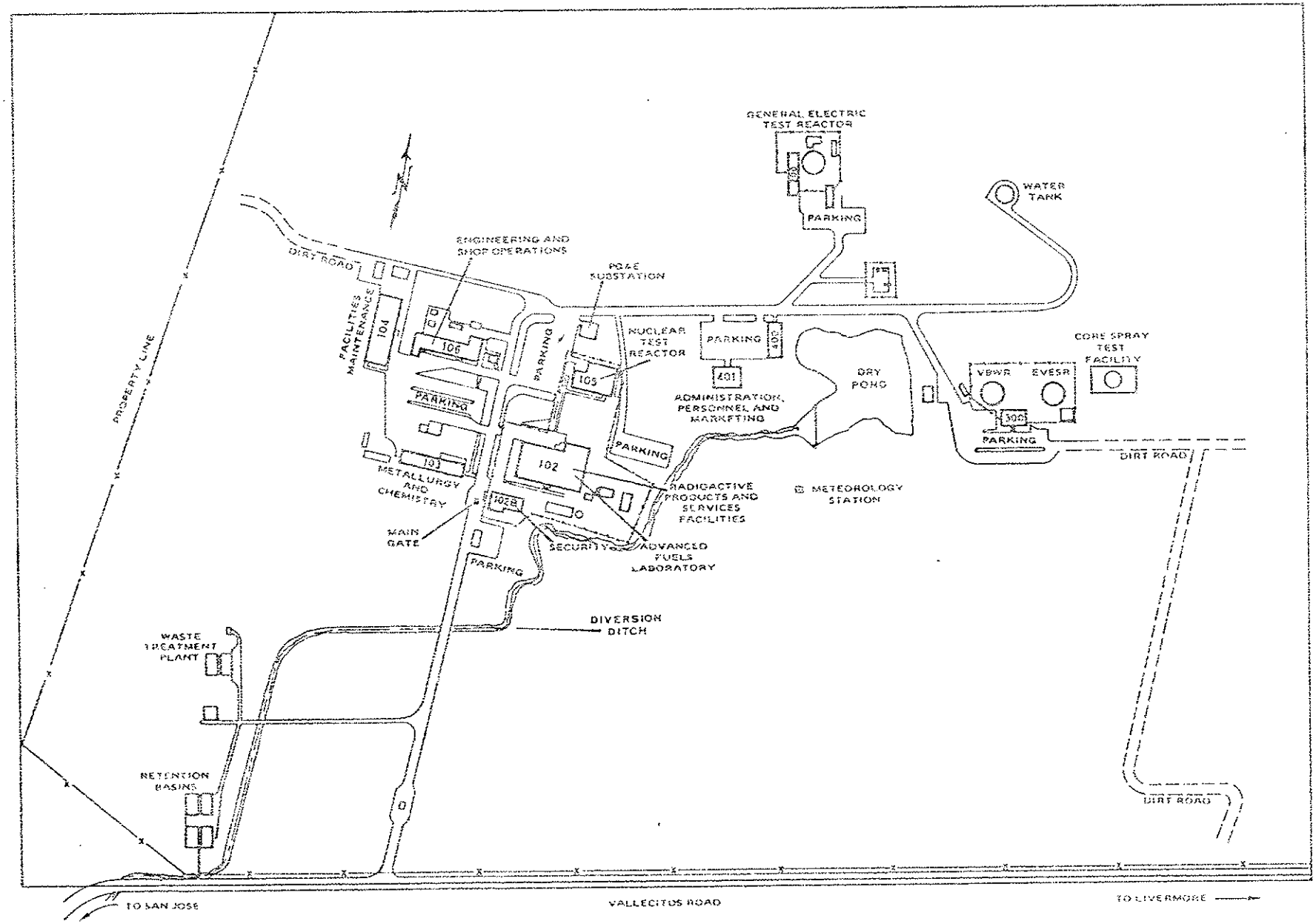
9. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Water Pollution Control Act or amendments thereto, and shall become effective ten (10) days after date of its adoption provided the Regional Administrator, Environmental Protection Agency has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 20, 1980.

FRED H. DIERKER
Executive Officer

Attachements:
Vallecitos Nuclear Center-Plot Plan
Standard Provisions, Reporting Requirements & Definitions - April 1977
Resolution No. 74-10
Self-Monitoring Program

VALLECITOS NUCLEAR CENTER - PLOT PLAN



ATTACHMENT 1

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

Revised

SELF-MONITORING PROGRAM
FOR

General Electric Company - Vallecitos Nuclear Center

Pleasanton, Alameda County

NPDES NO. CA0006831

ORDER NO. 81-27

CONSISTS OF

PART A (dated January 1978)

AND

PART B (adopted December 17, 1974,
amended June 8, 1976,
amended May 20, 1980 and
Revised August 31, 1981

OS-3

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. Water Supply

Station	Description
T	To be taken from the 500,000 gallon water storage tank above the General Electric Test Reactor (GETR). (Replaces Station I, also designated as station "S" by GEVNC, a previous sampling point along the water supply intake line).

B. Effluent

Station	Description
B	At any point in the outfall from the treatment facilities between the point of discharge and the point at which all waste tributary to that outfall is present. (formerly called Station E).

C. Receiving Waters

Station	Description
C-2	Located in the eastern most intermittent tributary to Vallecitos Creek, where the stream crosses the southern boundary of the site.
C-4	Located in the intermittent unnamed stream crossing the southern boundary of the site above the point where effluent enters the stream.
C-FP	Located at the downstream edge of the pond situated southwest of the GE site, commonly called the "Franco Pond".
C-5	At a point in Vallecitos Creek approximately one mile west of the site, but before dilution by the South Bay Aqueduct Waters and an unnamed tributary.

D. Groundwater

Station	Description
G-3G2	Well on private property west of the site (California State Well No. 4S/1E-3G2).
G-10H1	Well on private property south of the site. (California State Well No. 4S/1E-10H1).

G-10J1 Well on private property south of the site, and west of G-10H1. (California State Well No. 4S/1E-10J1, formerly monitored as G-4)

G-10P2 Well on private property southwest of the site (California State Well No. 4S/1E-10P2)

G-10P3 Well on private property southwest of the site and south of G-10P2 which perforates both the alluvium and the Livermore gravels. (California State Well No. 4S/1E-10P3)

E. Miscellaneous Reporting

The discharger shall submit the following quarterly: The location and quantity of the disposal of all sewage sludge removed from the site during the previous quarter.

II. SCHEDULE OF SAMPLING AND ANALYSES

The schedule of sampling and analyses shall be that given as Table I.

III. MODIFICATION OF PART "A" DATED JANUARY 1978

A. Exclusions: Paragraphs C.3, C.4, C.5a.4, C.5a.5, C.5a.6, C.5.c, C.5.d, C.5.e, D.3.b, D.4, E.2.b, E.4, F.3.e and F.3.g.

B. Modifications:

1. Paragraph F.3: "Written reports shall be filed quarterly by the 25th day of the month following the end of the calendar quarter."

2. Paragraph F.3.h shall be added to read: "A copy of any routine or special self-monitoring reports done for the State Department of Health Services or Nuclear Regulatory Commission of the effects of radioactive substances on the discharger's effluent, receiving waters, and groundwaters, on-site or off-site, shall be sent to this Regional Board."

I, Fred H. Dierker, Executive Officer, hereby certify that the foregoing Self-monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 81-27 , amending Order No. 80-28.

2. Has been ordered by the Executive Officer on the date shown below.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revision will be ordered by the Executive Officer.

August 31, 1981
Date Ordered

FRED H. DIERKER
Executive Officer

Attachment:
Table I

TABLE I

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

NPDES No. CA0006831 - Order No. 81-27

Sampling Station	T	B		A11 C	A11 G								
TYPE OF SAMPLE	C-24	C-24	G	G	G								
Flow Rate (mgd)		W											
Total Dissolved Solids (mg/l & kg/day)		M		M	3M								
Chlorine Residual & Dosage (mg/l & kg/day)	M	M		M	3M								
Settleable Matter (ml/1-hr. & cu. ft./day)													
Total Suspended Matter (mg/l & kg/day)		W											
Oil & Grease (mg/l & kg/day)			M[1/]										
Coliform (Total or Fecal) (MPN/100 ml) per req't													
Fish Toxicity, 96-hr. TL_{50} % Survival in undiluted waste		M											
Ammonia Nitrogen (mg/l & kg/day)													
Nitrate Nitrogen (mg/l & kg/day)													
Nitrite Nitrogen (mg/l & kg/day)													
Total Organic Nitrogen (mg/l & kg/day)													
Total Phosphate (mg/l & kg/day)													
Turbidity (Jackson Turbidity Units)			M	M[2/]									
pH (units)			W	M	3M								
Dissolved Oxygen (mg/l and % Saturation)		M		M									
Temperature (°C)			W	M[2/]									
Apparent Color (color units)													
Secchi Disc (inches)													
Sulfides (if DO < 5.0 mg/l) Total & Dissolved (mg/l)													
Arsenic (mg/l & kg/day)													
Cadmium (mg/l & kg/day)													
Chromium, Total (mg/l & kg/day)	M	M											
Copper, Dissolved (mg/l & kg/day)	M	M		M									
Cyanide (mg/l & kg/day)													
Silver (mg/l & kg/day													
Lead (mg/l & kg/day)	M	M											

TABLE I (continued)

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

NPDES No. CA0006631 - Order No. 81-27

Sampling Station	T	B		All C	All G								
TYPE OF SAMPLE	C-24	C-24	G	G	G								
Mercury (mg/l & kg/day)	M	M											
Nickel (mg/l & kg/day)													
Zinc (mg/l & kg/day)	M	M											
PHENOLIC COMPOUNDS (mg/l & kg/day)													
All Applicable Standard Observations			W	M	3M								
Bottom Sediment Analyses and Observations													
Total Identifiable Chlorinated Hydrocarbons (mg/l & kg/day)													

NOTE: 1/ Oil and grease sampling shall consist of 3 grab samples taken at equal intervals during the discharge, with each grab being collected in a glass container and analyzed separately. Results shall be expressed as a weighted average of the 3 values, based upon the instantaneous flow rates occurring at the time of each grab sample.

2/ To be sampled in C24C4 only

LEGEND FOR TABLE

TYPES OF SAMPLES

- G = grab sample
- C-24 = composite sample - 24-hour
- C-X = composite sample - X hours (used when discharge does not continue for 24-hour period)
- Cont = continuous sampling
- DI = depth-integrated sample
- BS = bottom sediment sample
- O = observation

TYPES OF STATIONS

- T = intake and/or water supply stations
- A = treatment facility influent stations
- B = waste effluent stations
- C = receiving water stations
- P = treatment facilities perimeter stations
- L = basin and/or pond levee stations
- B = bottom sediment stations
- G = groundwater stations

FREQUENCY OF SAMPLING

- E = each occurence
- H = once each hour
- D = once each day
- W = once each week
- M = once each month
- Y = once each year
- 2/H = twice per hour
- 2/W = 2 days per week
- 5/W = 5 days per week
- 2/M = 2 days per month
- 2/Y = once in March and once in September
- Q = quarterly, once in March, June, Sept. and December
- 2H = every 2 hours
- 2D = every 2 days
- 2W = every 2 weeks
- 3M = every 3 months
- Cont = continuous